

## PATENT COOPERATION TREATY



Translation

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 62896	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/050717	International filing date (day/month/year) 14 octobre 2003 (14.10.2003)	Priority date (day/month/year) 29 octobre 2002 (29.10.2002)
International Patent Classification (IPC) or national classification and IPC G06T 7/00		
Applicant THALES		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.  
  
☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 12 mars 2004 (12.03.2004)	Date of completion of this report 07 June 2004 (07.06.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/050717

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
pages \_\_\_\_\_ 1-12 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
pages \_\_\_\_\_ 1-21 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the drawings:  
pages \_\_\_\_\_ 1/3-3/3 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/50717

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	1-21	YES
	Claims		NO
Inventive step (IS)	Claims	1-21	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-21	YES
	Claims		NO

**2. Citations and explanations****1. Reference is made to the following documents:**

D1: US-B1-6 232 602 (Kerr James Richard) 15 May 2001

D2: ROBERTS B ET AL: "image processing for flight crew enhanced situation awareness" Sensing, Imaging and Vision for Control and Guidance of Aerospace Vehicles, Orlando, FL, USA, 4-5 April 1994, vol. 2220, pages 246-255, Proceedings of the SPIE, 1994, USA

**2.1. The present application meets the requirements of PCT Article 33(2) and (3), since the subject matter of claim 1 complies with the criterion of novelty and inventive step. The reasons are as follows:**

Claim 1:

D1 describes:

- an image processing electronic device (1) generating an output image from an input image, the two images consisting of pixels, wherein the input image from a first video sensor (2) is representative of a scene containing at least one discrete light source, said input image containing a

first representation of said discrete light source and said output image comprising a second representation of said discrete light source (see column 6, line 62 - column 8, line 46);

D1 does not describe:

- an electronic contrast enhancing unit (5) for providing, from the input image, an enhanced contrast image;
- an electronic selection unit (6) for providing, from said enhanced contrast image, a filtered image that only contains at least a first set of pixels with an electronic level that exceeds a first threshold, said first set corresponding to the representation of at least one potential light source;
- an electronic likelihood estimation unit (7) for providing, from said first set of pixels of the filtered image, an estimated image comprising a second set of pixels, wherein said second set corresponds to the representation of estimated light sources, and the distribution of pixels in the estimated light source representation corresponds to two-dimensional mathematical functions; each estimated light source representation being associated with a likelihood probability;
- an electronic validation unit (8) for providing, from the estimated image, the final image containing a representation of the estimated light source if the associated likelihood probability is higher than a second threshold.

D1 describes an enhanced vision system using two infrared sensors of different wavelengths for detecting (1) electric lights and (2) the

background. The two detected images are merged into a single image displayed to the pilots.

In the image merging step, the electrical lights are determined using a local maximum calculation (see abstract and figure 1).

D1 does not describe the contrast enhancement step or the step of estimating a representation of light sources using likelihood probabilities.

D2 describes image generation methods for assisting pilots in dangerous situations. Image enhancement is mentioned in D2 (see page 246, lines 18-19), but neither D2, nor the other prior art documents mention the estimation of a representation of light sources based on likelihood probabilities.

An inventive step is therefore recognised in claim 1, which meets the requirements of PCT Article 33(2) and (3).

- 2.2. Contrary to the requirements of PCT Rule 5.1(a)(ii), the description does not outline the relevant prior art set forth in documents D1 and D2, and does not cite these documents.